U.S. Environmental Protection Agency
Total Coliform Rule / Distribution System
Advisory Committee Meeting

July 17-18, 2007

Location:
Washington Marriott
22nd and M Streets NW
Washington, DC 20037

Draft Meeting Summary

Meeting Objectives:

- *Discuss the purpose, efficacy and applicability of current provisions of the Total Coliform Rule; understand linkages to other rules; and share perspectives on possible objectives for reaching an agreement in principle about revisions to the TCR.*
- *Discuss purpose and possible approach to reach an agreement in principle on data collection and research needs to better understand potential distribution system risks.*
- *Discuss initial plans for organizing a federal advisory committee on EPA's Total Coliform Rule, including scope, protocols and schedule.*
- *Discuss data sources and potential analyses to support the advisory committee.*

I. Welcome, Introductions, Meeting Objectives and Agenda

Jini Mohanty, the Designated Federal Officer, opened the meeting and welcomed the meeting attendees and members of the Advisory Committee to this first meeting of the Total Coliform Rule / Distribution System Advisory Committee (TCRDSAC).[1] The TCRDSAC charter was filed with the Library of Congress on July 16, 2007, officially constituting the Committee.[2] The charge to the Committee is to make recommendations on revisions to the Total Coliform Rule (TCR) and on what information about distribution systems is needed to better understand and address the possible public health impact from the potential degradation of drinking water quality in distribution systems.

Cynthia Dougherty, the director of the EPA Office of Ground Water and Drinking Water (OGWDW) and the chair of the Committee, provided the opening remarks. She

[1] Please see Attachment A for the Total Coliform Rule/Distribution System Federal Advisory Committee roster. Please see Attachment C for a list of the meeting attendees. Please see Attachment B for a copy of the meeting agenda.
[2] Please see Attachment D for the Committee charter.

emphasized the high priority EPA and OGWDW place on collaboration. The TCRDSAC is one of many formal and informal collaborative efforts established by OGWDW to develop consensus on the elements of a regulation or on other topics related to the implementation of the Safe Drinking Water Act. She noted that the National Academy of Sciences highlighted the importance of integrating dialogue and strong technical analysis in its report *Understanding Risk: Informing Decisions in a Democratic Society*. The report specifically cited the Disinfectants and Disinfectants Byproducts Rule Committee and the subsequent efforts that built on it as an example of the shared learning and iterative approach to analysis and decision making that is needed to address complex scientific and technical policy issues.

Ms. Dougherty also explained to the Committee the importance of the Total Coliform Rule (TCR) as one of the tools for implementing the Safe Drinking Water Act and EPA's decision to revise the rule following the Safe Drinking Water Act's six year review process. The Agency's goal is to improve implementation while maintaining or achieving better public health protection. The Committee will provide significant input into that process.

Ms. Dougherty then introduced Gail Bingham from RESOLVE who will serve as the lead facilitator for the process. Ms. Bingham further emphasized the strength of the collaborative process to develop a strong product. Each of the Committee members has valuable knowledge, experiences, and viewpoints to bring to the table. She briefly reviewed the work of the group of technical experts in the past few months to help prepare for this effort. One of the tasks of the Committee for this particular meeting is to identify information and analyses that the technical experts can provide to inform the discussion.

Ms. Bingham also explained the special role Doug Owen of Malcolm Pirnie will play for the Committee. Mr. Owen will support the Committee as a whole, in the same manner as does the RESOLVE facilitation team, specifically to serve in a leadership role in the technical work group, assuming its formation by the TCRDSAC later in the meeting. He will synthesize the work group's discussions, prepare them for presentation, and present them to the advisory committee on behalf of the technical group.

Ms. Bingham then briefly reviewed the meeting agenda and the meeting objectives. The overall goal for the meeting is to create a solid foundation for the Committee's work over the next year, both to establish a common basis of information for future committee discussions and to establish a common understanding of the scope and protocols for committee work. She recommended four principles to guide collaborative conversations: keep the focus on the room, be solution-oriented, engage in shared learning, and maintain decision-relevance.

II. Presentations

Over the course of the two-day meeting, Committee members heard six presentations prepared by a group of technical experts. The purpose of the presentations was to

provide the Committee with background information about the original rationale and assumptions of the Total Coliform Rule; the practicalities of TCR implementation; issues specific to distribution systems; and data sources and analyses for TCR. The following PowerPoint presentations are available online at http://www.epa.gov/safewater/disinfection/tcr/pdfs/meeting-summary_tcr_revisions_july2007.pdf.

- Charlotte Smith, UC Berkeley School of Public Health, and Gary Burlingame, Philadelphia Water Department, presented on "Total Coliform and *E. coli*: History on the Use of Coliforms in Drinking Water Regulations"[3]
- Tom Grubbs, US EPA, Kenneth Rotert, US EPA, and Alan Roberson, American Water Works Association, presented on "1989 TCR: Requirements, Rationale, and Subsequent Developments"[4]
- Jerry Smith, Minnesota Department of Health, presented on "Day in the Life of a State Regulator"[5]
- Mark LeChevallier, American Water, presented on "An Overview of the NAS Report: Drinking Water Distribution Systems"[6]
- Stig Regli, US EPA, presented on "Data Sources and Preliminary Analysis for TCR"[7]

In addition, Gary Lynch, Park Water Company, presented a training video titled "Routine Coliform Sampling For Utilities" to present the challenges faced by large and small water systems when sampling to meet the requirements of the TCR.

After each presentation, Committee members asked clarifying questions and discussed the information presented. Topics raised during the discussions included:

- The link between total coliform (TC) as an indicator and public health;
- TCR compliance monitoring locations and the use of sample siting plans;
- The use of sanitary surveys;
- Challenges to identifying the cause of a TC positive;
- The difference between TC from contamination and TC from biofilm;
- The use of *E. coli* as an indicator of fecal contamination and the probability that *E. coli* found in distribution systems originated from biofilm;
- Potential indicators other than TC, e.g. coliphage, enterococci, and *E. coli*;
- The cost of the TCR and the cumulative costs of other rules;

[3] Please see Attachment E for a copy of Ms. Smith's presentation. Please see Attachment F for a copy of Mr. Burlingame's presentation.
[4] Please see Attachment G for a copy of Mr. Grubbs', Mr. Rotert's, and Mr. Roberson's presentation.
[5] Please see Attachment H for a copy of Mr. Smith's presentation.
[6] Please see Attachment I for a copy of Dr. LeChevallier's presentation.
[7] Please see Attachment J for a copy of Mr. Regli's presentation.

- Jurisdiction of the utility, which ends where private property ownership begins;
- Public notification; and
- The uniqueness of each non-community water system (NCWS) as each one is unlike any other water system or other NCWS.

III. Proposed Charge and Scope of the Total Coliform Rule/Distribution System Advisory Committee and Initial Issues for Consideration

Ms. Bingham reviewed the charge to the Committee and elaborated on the scope of the Committee's work.

One member identified one of the successes of TCR as providing a means, particularly for small systems, to observe the conditions inside distribution systems. This member noted the trend of decreasing waterborne disease outbreaks that parallels increasing compliance with all federal rules.

A Committee member emphasized another ancillary benefit of TCR: implementation of the TCR results in increased attention to operations in potable water systems, which has led to an improved attitude towards water utilities, the professionalization of the trade, and an increased public awareness of drinking water issues.

The Committee members discussed the charge and the proposed scope of the Committee. Some reminded the group that the TCR is related to other rules and regulations and expressed the view that the linkages between the TCR and other rules and regulations should not inhibit the Committee's discussions regarding revisions to the TCR.

One member noted that in communities with small systems, simple changes could decrease the level of chronic illness. These systems do not have the same resources as larger utilities, but can have greater health threats.

The Committee wished to know the exact language of the public notification rule for public water systems (Note: the full rule can be found at http://www.epa.gov/fedrgstr/EPA-WATER/2000/May/Day-04/w9534.htm).

Committee members raised no fundamental objections to the charge to the Committee in the proposed scope. Formal approval was deferred to the overall approval of protocols.

As the Committee discussed the proposed scope for their work, they began to identify issues they might wish to consider in making recommendations on improvements to the current rule. Among the key questions identified by the Committee are the following:

- Should the three purposes of the 1989 rule be retained or modified?
- Is a maximum contaminant level (MCL) or a maximum contaminant level goal (MCLG) appropriate for total coliform? Where might MCL or MCLG be appropriate? Or is a treatment technique more appropriate?
- Is there a better way to achieve monitoring and reporting compliance than through non-acute violations?

- What, if any, phasing of implementing any TCR changes should be considered?
- What different approaches should be taken for different types of systems?
- What options should be considered in response to TCR violations? What is appropriate risk management?
- What is an appropriate approach to public notification? How should the severity of risk be taken into account?

IV. TCRDSAC Process Map and Timeline

Ms. Bingham reviewed the process map developed by RESOLVE, with input from stakeholders, as a suggested approach or sequence of activities for the Committee's efforts to reach an agreement in principle by the summer or fall of 2008.[8] She noted that this was meant only as a starting point, to provide a general framework for planning purposes, and that the Committee may need to revise it based on their discussions over time.

General concepts in the process map include:

- Following commonly accepted steps in a problem solving process: initial meetings focused on clarification of issues; analysis of information; leading to development of conceptual options; followed by evaluation and more detailed refinement of options; and then agreement and ratification by the organizations and constituencies represented by Committee members.
- Starting on both elements of the charge simultaneously (so that the Committee can give clear direction to the technical work group, when formed, based on the initial clarification of issues), and then focusing mostly on the TCR revisions. Distribution system information collection recommendations would then begin mid-way through the process, so that information needs identified in the TCR revision discussion can be added to the distribution system discussion. Section V of this document discusses the charge.
- Conducting technical meetings prior to each TCRDSAC meeting, with significant work between meetings.
- An assumption that there will be ten meetings, with possibilities noted for shortening the process.

Ms. Dougherty outlined the basic timeline for developing a rule following the agreement in principle by the TCRDSAC.[9] She estimated that it will be approximately 18-24 months following the Committee's agreement in principle before the proposed rule is published in the Federal Register.

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[8] The process map is available upon request from Ms. Jini Mohanty, the Designated Federal Officer. Please note that the process map is intended for planning purposes only. For specifics on the content of TCRDSAC meetings, please refer to each meeting's Federal Register Notice (e.g. the notice for the next meeting can be found at 72 FR 46631, August 21, 2007).

[9] The Rule Development Schedule is available upon request from the Designated Federal Officer.

V. Federal Advisory Committee Act Orientation and Proposed TCRDSAC Protocols

Ms. Mohanty provided a brief orientation of the Federal Advisory Committee Act to the Committee members.[10]

Ms. Bingham reviewed the proposed protocols. The discussion that followed included the following topics:

- Representation for non-community water systems (NCWS) on the Committee;
- Caucusing;
- Identifying disagreements as early as possible so that they can be resolved; and
- The challenges of keeping constituencies informed while not characterizing the views of other members, particularly given the evolution of Internet-based mass-communication tools (e.g. weblogs, webcasts).

Because of the diversity of NCWSs, no one organization was identified as able to represent them directly, but several Committee members have experience with NCWS. The Small Business Regulatory Enforcement Fairness Act review will provide an opportunity for additional consultation with NCWSs and other small systems, and the Committee may wish to plan supplemental ways to engage individuals from this sector and to learn about their perspectives. The National Park Service also may be a source of good information and experience.

The Committee agreed to make the following two changes to the proposed protocols:

- Edit the language in sections 1(a and b) and 2(a and b) to better align the agreement and the products; and
- Edit section 6(d), "Interactions with the Press" to reflect advances in the media since previous FACA protocols were written (e.g. blogs), while remaining true to the spirit of not adversely influencing the process and the principles of good faith, manners, and common sense.

Cynthia Dougherty, Alan Roberson, Bruce Tobey, and Lynn Thorpe agreed to discuss the section on interactions with the press. The facilitator and staff will consult EPA's Federal Advisory Committee Act attorney for additional advice on use of electronic media for Committee conversations. The Committee deferred final decisions on the proposed protocols including the scope until the September meeting.

The Committee also agreed to form a technical work group to provide data analysis and information to inform the discussion of the Committee. They discussed the need for additional public health expertise and identified an initial list of individuals to consider. Mark LeChevallier, Harvey Minnigh, John Neuberger, and Bob Vincent agreed to help frame questions and select experts for an initial set of presentations on public health issues.

[10] Please see FACA training materials in binder of meeting materials.

VI. Technical Support for the TCRDSAC Process

Over the course of the two-day meeting, and in relation to potential policy questions, the Committee discussed the technical information, analyses, and data they would need to inform their discussions. Members identified the following possible questions for the technical work group to address:

Big Picture Questions

- Are the right things being measured at the right frequency and locations to protect public health?
- How well is the implementation of the current TCR accomplishing the rule's intent?
- How would the distribution system be monitored to measure the quality of water? How would monitoring to evaluate the integrity of the distribution system be different than the current rule? What are the options and challenges related to each type of monitoring?
- What are the revision options within the current drinking water regulatory construct?

Public Health

- What is the link between TC (as an indicator) and public health?
- What is the informative value of TC as an indicator of fecal contamination?
- What are the quantified and unquantified health benefits of the rule?
- What information is available on waterborne disease outbreaks and the incidence of endemic disease?

Routine and Repeat Sampling

- How representative is the collected water sample for the time period it is supposed to represent?
- What is the level of statistical confidence of that sample?
- How does the 10% statistical analysis done in the early 1980s hold up today?
- What is the distribution of TC and *E. coli* occurrences in the distribution system, by system type?
- What is the value added of repeat sampling? What does the repeat sampling tell us?
- To what extent does sampling under the current rule take into account weather conditions?

State Implementation

- Since the start of TCR implementation, how successful have states been in achieving compliance?
    - What causes non-compliance?
    - What is the occurrence of non-compliance?
    - How can non-compliance be reduced?

- What information is available about the number of violations, the types of violations, and the characteristics of the systems with violations?
- What is the impact of increasing or decreasing the flexibility in the rule for state implementation?
- What are the top implementation problems? Which of those are the most problematic for the states?
- How many small systems are currently taking advantage of reduced monitoring provisions?

Burden of TCR

- What are the costs of the current rule (including infrastructure implications)?
- How do these costs compare with public health benefits?
- Is there a way to maintain or improve public health benefits in a more economical way?

In addition to the specific questions for the technical work group, members of the Committee asked general questions about data availability, including:

- What data are available for NCWS?
- What data are available other than regulatory data?
- Where are the decision-relevant data gaps? How can they be filled in?
- Where can the data and research complement each other?

Members also suggested looking at surveillance data from the utilities and any international data about TC as an indicator.

Since time did not permit for discussion of a specific charge on distribution system aspects to the technical work group, Ms. Bingham suggested that the Committee rely on the work group to infer the information the Committee needs and revisit the charge at their September meeting.

VII. Public Comment

No members of the public offered comment at this meeting.

VIII. Next Steps and Action Items

Ms. Bingham proposed additional meeting dates for 2007 and 2008 for both the technical work group and the Committee.[11] She asked Committee members to please hold those dates, which will be confirmed after consultation with members who had not provided information about their availability.

[11] The proposed schedule is available from the Designated Federal Officer. Please note that technical workgroup meetings are not public meetings.

The following action items came out of the meeting:

TASK	WHO	WHEN
Provide summary of 7/18-19 meeting	RESOLVE	Early August
E-mail RESOLVE with any additional questions to consider	Committee	ASAP
Send RESOLVE people for inclusion to the three e-mail distribution lists • Committee members and alternates • Committee CC list • TWG • Interested members of the public list	Committee members	ASAP
Set up an email list for interested members of the public	RESOLVE	ASAP
Edit sections 1(a and b) and 2 (a and b)of the proposed protocols so that the agreement and the products are in better alignment	RESOLVE	Before September 18-19 meeting
Edit section 6(d) of the proposed protocols: • Acknowledge changes in communication techniques • Changes should reflect principles in the current draft protocols, acknowledging changes in electronic media (e.g. rise of mass emails and blogs), while using good faith, manners, and common sense	RESOLVE	Before September 18-19 meeting
Discuss proposed protocols and scope with represented organizations	Committee members	Before September 18-19 meeting
Identify what materials will be put onto the EPA website, and what materials will not	EPA and RESOLVE	Before September 18-19 meeting
Identify length of time between EPA receiving materials and materials being put onto the website	EPA and RESOLVE	ASAP
Clarify the means of circulation that makes a document public	EPA and RESOLVE	ASAP

Follow-up with John Neuberger, Mark LeChevallier, Harvey Minnigh and Bob Vincent about public health experts	EPA and RESOLVE	Before September 18-19 meeting
Data collection and analyses based on the discussion of the Committee	TWG	Ongoing

The technical work group will next meet on August 2/3, September 6, and September 17, 2007 in Washington, D.C. The TCR/DS Federal Advisory Committee will next meet on September 18-19, 2007 in Washington, D.C.

NOTE: This document was prepared by the facilitators for consideration by the Total Coliform Rule Distribution System Advisory Committee and does not constitute a product of the Committee. The Total Coliform Rule Distribution System Advisory Committee is a federal advisory committee chartered by Congress, operating under the Federal Advisory Committee Act (FACA; 5 U.S.C., App.2). The Committee provides advice to the Administrator of the U.S. Environmental Protection Agency on revisions to the Total Coliform Rule (TCR), and on what information about distribution systems is needed to better understand the public health impact from the degradation of drinking water quality in distribution systems. The findings and recommendations of the Committee do not represent the views of the Agency, and this document does not represent information approved or disseminated by EPA.

Attachments

Attachment A – Federal Advisory Committee roster*
Attachment B – Meeting agenda*
Attachment C – Meeting Attendees
Attachment D – Committee charter*
Attachment E – Charlotte's Smith's presentation, "Indicators 101"*
Attachment F – Gary Burlingame's presentation, "Total Coliform and *E. coli*: History on the regulatory use of indicators of microbial contamination"*
Attachment G – Tom Grubbs, Alan Roberson, and Kenneth Rotert's presentation, "1989 TCR: Requirements, Rationale, and Subsequent Developments"*
Attachment H – Jerry Smith's presentation, "State Implementation of the Total Coliform Rule"*
Attachment I – Mark LeChevallier's presentation, Assessing Distribution System Integrity: physical, hydraulic, and water quality"*
Attachment J – Stig Regli's presentation, Data Sources and Possible Preliminary Analysis for TCR"*

* The meeting presentations and other documents can be found online at http://www.epa.gov/safewater/disinfection/tcr/regulation_revisions_tcrdsac.html.

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Total Coliform Rule / Distribution System
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Meeting Attendees

John Albert, AwwaRF
Sarah Bahrman, U.S. EPA
David Baird, City of Milford, Delaware*
Pamela Barr, U.S. EPA
Jeremy Bauer, U.S. EPA
Ronald Bergman, U.S. EPA
Scott Biernat, Cadmus Group, Inc.
Gail Bingham, RESOLVE
Manja Blazer, IDEXX
Erica Brown, Association of Metropolitan Water Agencies
Gary Burlingame, Philadelphia Water Department
James Cherry, City of Virginia Beach Public Utilities
Sean Conley, U.S. EPA
Tom Curtis, AWWA
Debbie Dalton, U.S. EPA
Cynthia Dougherty, U.S. EPA*
Vicki Ellis, U.S. EPA
Patti Fauver, Utah Department of Environmental Quality*
Rich Giani, DC Water and Sewer Authority
Kathy Grant, RESOLVE
Thomas Grubbs, U.S. EPA
Yu-Ting Guilaran, U.S. EPA
Andrew Hanson, U.S. EPA
Curtis Haymore, Cadmus Group, Inc.
Christine Maloni Hoover, Pennsylvania Office of Consumer Advocate*
Mary Howell, Backflow Management, Inc.
Margo Hunt, U.S. EPA
Dawn Kristof Champney, Water and Wastewater Equipment Manufacturers Association
Dan Kroll, HACH Homeland Security Technologies
Mark LeChevallier, American Water*
Debbie Lee, RESOLVE
Audrey Levine, U.S. EPA
Carrie Lewis, Milwaukee Water Works*
Sabrina Lovell, U.S. EPA
Gary Lynch, Park Water Company
Mike Messner, U.S. EPA
Greg Miller, U.S. EPA
Harvey Minnigh, RCAP Solutions, Inc.*
Jini Mohanty, U.S. EPA
Ed Moriarty, U.S. EPA

John Neuberger, University of Kansas Medical Center*
Eva Nieminski, Utah Department of Environmental Quality
Darrell Osterhoudt, ASDWA
Graciela Ramierez-Toro, CECIA-IAUPR
Stig Regli, U.S. EPA
J. Kevin Reilly, U.S. EPA
Alan Roberson, AWWA
Mark Rodgers, U.S. EPA
Crystal Rodgers-Jenkins, U.S. EPA
Jeff Rosen, Clancy Environmental Consultants, Inc.
Ken Rosenfeld, National League of Cities
Kenneth Rotert, U.S. EPA
Tom Schaeffer, American Metropolitan Water Agencies
John Scheltens, City Engineer, City of Hot Springs, South Dakota
Nicole Shao, U.S. EPA
Susan Shaw, U.S. EPA
Charlotte Smith, Charlotte Smith & Associates
Jerry Smith, Minnesota Department of Health*
Vanessa Speight, Malcolm Pirnie
David E. Spenard, Kentucky Office of the Attorney General
Jim Taft, ASDWA
Lynn Thorp, Clean Water Action*
Bruce Tobey, Gloucester, Massachusetts City Council*
Anita Ullagaddi, U.S. EPA
Lesley Vazquez-Coriano, U.S. EPA
Steve Via, American Water Works Association
Ted Victor, U.S. EPA
Bob Vincent, Florida Department of Health*
David Visintainer, City of St. Louis Dept. of Public Utilities*
Pat Ware, BNA
Paul Whittemore, Pembroke Water Works
Erik Winchester, U.S. EPA
Mae Wu, NRDC*
Yvonne Yuen, U.S. EPA

*Federal Advisory Committee member